



ATTACHMENT A

Remarks

Claims 1-26 have been rejected under 35 USC 112, second paragraph, as being "indefinite." The claims have been extensively amended so as to overcome the objections raised and the original set of claims, claims 1-26, has been replaced by a new set of claims, claims 27-50.

Briefly considering the matters raised in the rejection under 35 USC 112, the Examiner is correct in pointing out that the scope of the language "wherein such signals are the only ones with the potential to be line-of-sight signals" is unclear. Different language has been used in new claim 27, in section (iii). The Examiner is also correct in pointing out that it is not clear how the received signal can be determined to be "the only ones with potential to be line-of-sight signals." Again, new language has been used in new claim 27 in order to overcome the objection raised.

It is also agreed that the language "transmit a synthetic Doppler" is not clearly written and the claims have been amended to refer to Doppler signals or Doppler shifts. In this regard, the word "Doppler" has been replaced with -- Doppler shift -- throughout the entire specification.

It is also agreed that the recitation with respect to the transmitters was unclear and new language has been used in claim 27 which clarifies the relationship between the transmitters recited and provides proper antecedent basis for these recitations.

Further, the Examiner has questioned the language "centre operable to receive signals ... from the transceiver and to compute and compare a line-of-position fro TOA or TDOA data from the first to arrive signal from each transmitter with the angles of transmission." This language has been completely revised in new claim 27 which makes it clear that the transceiver measures the TOA or TDOA and angle of transmitter, that the receiver forwards the measurements to a processing means and that the processing means processes

the measurements to determine the location of the transceiver. Moreover, the other claim language of claim 1 to which the Examiner has objected has also been replaced by new recitations in new claim 27. It is respectfully submitted that these new recitations clearly define the concepts sought to be claimed here. Further, it is noted that the language "the correct angles of transmission" has also been eliminated in new claim 27.

Finally, with respect to claim 4, the recitation "the reference Doppler shift" has been eliminated and replaced by new language which better defines this term.

In summary with respect to the rejection under 35 USC 112, second paragraph, new claims 27-50, which replace original claims 1-26, have been drafted so as to specifically address the issues raised by the Examiner and are now believed to be in accordance with the requirements of the second paragraph of 35 USC 112.

Turning to the rejection on prior art, claims 1-26 have been rejected under 35 USC 103(a) as being "unpatentable over" the McReynolds patent. This rejection is respectfully traversed, although the claims have been amended to more clearly define the differences between the present invention and the McReynolds patent.

It is respectfully submitted that the system and method of locating a receiver as taught by McReynolds are fundamentally in a number of important respects from the present invention both as defined in the rejected claims as well as defined in new claims 27-50. One fundamental difference is that the present invention as claimed in new claim 27 uses both time-of-arrival or time-difference-of-arrival measurements and angle-of-transmission measurements to locate the transceiver. In contrast, the McReynolds system uses only angle-of-transmission data to locate a receiver. Because the system and method of the present invention provide for measuring both time-of-arrival or time-difference-of-arrival and angle-of-transmission, the location estimate based on time-of-arrival/time-

difference-of-arrival is validated with the location estimate based on the angle-of-transmission measurement. Because McReynolds uses only one type of measurement, this makes the McReynolds system vulnerable to errors in the location estimate due to the effect of reflected signals (or non-line-of-sight signals) not being taken into consideration in the location estimate.

Further, the present invention as claimed in new claim 27 uses prior knowledge of structural information regarding the enclosed location in order to resolve any mismatch between location estimations based on time-of-arrival or time-difference-of-arrival and angle-of-transmission measurements. In other words, the present invention as claimed in claim 27 recites a feature that enables calculating the location of the transceiver even with non-line-of-sight signals, while the McReynolds patent does not disclose such a feature. Thus, claim 27 distinguishes from the McReynolds reference in this regard as well.

In addition, while no specifications are provided for coding the signal in the McReynolds system, the present invention as claimed in claim 27 recites the use of a short spreading code signal along with a synthetic Doppler shift by revolving or rotating an antenna wherein the period of the spreading code is related to the rate and thus the period of the antenna rotation (see claim 27). This eliminates the need for the embedded reference data to include the rate of rotation of the antenna and the start time of the rotation of the antenna.

The dependent claims set forth further features not disclosed by the McReynolds patent. For example, claim 34 recites that the receiver measures the peak-to-peak Doppler shift. This enables measurement of the vertical component of the signal by determining the cosine of the change of the peak-to-peak Doppler shift and to thus estimate the elevation of the transducer, as claimed in dependent claim 35. These features are not disclosed in the McReynolds patent. In addition, claims 31 and 36 recite that the antenna is rotated in a vertical direction. This enables elevation to be determined more precisely. Again, this feature is not disclosed in the McReynolds patent.

Method claim 38 includes recitations similar to that of claim 27 and defines over the McReynolds for at least the reasons set forth above in support of the patentability of claim 27. Similar remarks apply to a number of the dependent method claims.

Allowance of the application in its present form is respectfully solicited.

END REMARKS